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09/773,116	01/31/2001	Derek M. Dempsey	CEO-011.01	5451

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EXAMINER	
HOLMES, MICHAEL B	
ART UNIT	**PAPER NUMBER**
2121	9

DATE MAILED: 12/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/773,116	Applicant(s) DEMPSEY ET AL.	
	Examiner Michael B. Holmes	Art Unit 2121	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *(3)* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 January 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 January 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *8* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

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Examiner's Detailed Office Action

1. This action is responsive to application **09/773,116,** filed **January 31, 2001**.

2. **Claims 1-22** have been examined.

Information Disclosure Statement

3. Examiner acknowledges applicants' submission of prior art and information disclosure. Nevertheless, applicant is respectfully remind of the ongoing Duty to disclose 37 C.F.R. 1.56 all pertinent information and material pertaining to the patentability of applicant's claimed invention, by continuing to submitting in a timely manner PTO-1449, Information Disclosure Statement (IDS) with the filing of applicant's of application or thereafter.

Drawings

4. The formal drawings have been reviewed by the United States Patent & Trademark Office of Draftperson's Patent Drawings Review. Form PTO-948 has been included.

Specification

5. The substitute specification received on June 7, 2001, paper #4, was not entered. Moreover, the lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Additionally, on page 10, applicant needs to provide the copending US patent application number. Applicant's cooperation is required in correcting any errors of which applicant may become aware in the specification.

Claim Interpretation

6. Office personnel are to give claims their **"broadest reasonable interpretation"** in light of the supporting disclosure. *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in the claim are not read into the claim. *In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-551(CCPA 1969). See *also *In re Zletz*, 893 F.2d 319, 321-22, 13 USPQ2d 1320, 1322(Fed. Cir. 1989) ("During patent examination the pending claims must be interpreted as broadly as their terms reasonably allow. . . . The reason is simply that during patent prosecution when claims can be amended, ambiguities should be recognized, scope and breadth of language explored, and clarification imposed. . . . An essential purpose of patent examination is to fashion claims that are precise, clear, correct, and unambiguous. Only in this way can uncertainties of claim scope be removed, as much as possible, during the administrative process."). *see* MPEP § 2106

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. **Claims 1-10** are rejected under 35 U.S.C. 102(b) as being anticipated by Type Classification of Semi-Structured Documents, Markus Tresch; Neal Palmer; Allen Luniewski; (hereinafter referred to as "*Tresch et al.*") Proceedings of the 21st VLDB Conference, Zurich, Switzerland, (1995).

Regarding Claim 1:

Tresch et al. teaches,

A method of retraining a trainable data classifier comprising the steps of: providing a first item of training data **[(2 An Experimental Vector Space Classifier, right column, page 264** "2. *Classifier Training. The classifier is trained with training data – a collection of typical documents for each class.*"**)]**; comparing the first item of training data with a second item of training data already used to train the data classifier **[(2 An Experimental Vector Space Classifier, right column, page 264** "*Given a trained classifier with centroids for each class, classification of a document d means finding the "most similar" centroid v(c) and assigning d to that class c.*"**)]**; calculating a measure of conflict between the first and second items of training data **[(3 The Confidence Measure, right column, page 266 "Definition.** The *confidence* of an assignment of document d to class c(i) is defined as … "**)]**; using the first item

of training data to retrain the data classifier responsive to the measure of conflict. **[(3.1 Classifier Training Strategies, page 267 "***In this section, we concentrate on using the confidence measure to speed up classifier training. Quick (re)training is an ability that is crucial for any classifier, especially for extensibility, ...* **")]**

Regarding Claim 2:

Tresch et al. teaches,

A method according to claim 1 wherein the step of using the first item of training data is responsive to a predetermined conflict threshold value. **[(3 The Confidence Measure, left column, second paragraph, page 266-267** *"One can make use of that to alert a human expert, ... to approve the classifications of document d as class c.*"**)]**

Regarding Claim 3:

Tresch et al. teaches,

A method according to claim 2 wherein the threshold value is non-zero. **[(3 The Confidence Measure, left column, fourth paragraph, page 266-267** *"If for example, the threshold Θ is set to 0.1, then about 94% are classified ...* **")]**

Regarding Claim 4:

Tresch et al. teaches,

A method according to claim 1 wherein the measure of conflict comprises a geometric difference between the first and second items of training data. **[(3 The Confidence Measure, right**

column, page 266 "Definition. The *confidence* of an assignment of document d to class c(i) is defined as ... ")]

Regarding Claim 5:

Tresch et al. teaches,

A method according to claim 4 wherein the geometric difference comprises a Euclidean distance. **[(2.2 Alternative Similarity Metrics, page 266 "***... Euclidian Distance.***")]**

Regarding Claim 6:

Tresch et al. teaches,

A method according to claim 1 wherein the measure of conflict comprises an association coefficient of the first and second items of training data. **[(2 An Experimental Vector Space Classifier, right column, page 264 "***A commonly used similarity measure is the cosine metric. It defines the distance between document d and class centroid c by the angle* α *...***")]**;

Regarding Claim 7:

Tresch et al. teaches,

A method according to claim 6 wherein the association coefficient is a Jaecard's coefficient. **[(2.2 Alternative Similarity Metrics, page 266 "***... Jaccard ...***")]**

Regarding Claim 8:

Tresch et al. teaches,

A method according to claim 7 wherein the measure of conflict is derived from a both a Euclidean distance between and a Jaccard's coefficient of the first and second items of training data. **[(2.2 Alternative Similarity Metrics, page 266 "*... Jaccard ...Euclidian Distance ...*")]**

Regarding Claim 9:

Tresch et al. teaches,

A method according to claim 8 wherein the measure of conflict is derived from a Euclidean distance and a Jaccard's coefficient composed in an exponential relationship with respect to each other. **[(2.2 Alternative Similarity Metrics, page 266 "*... Jaccard ...Euclidian Distance ...*")]**

Regarding Claim 10:

Tresch et al. teaches,

A method according to claim 8 wherein the measure of conflict is derived from a function of a Euclidean distance multiplied by an exponent of a function of the Jaccard's coefficient. **[(2.2 Alternative Similarity Metrics, page 266 "*... Jaccard ...Euclidian Distance ...*")]**

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. **Claims 11-13** are rejected under 35 U.S.C. 103(a) as being unpatentable over Type Classification of Semi-Structured Documents, Markus Tresch; Neal Palmer; Allen Luniewski; (hereinafter referred to as "*Tresch et al.*") Proceedings of the 21st VLDB Conference, Zurich, Switzerland, (1995)

in view of

Howard (USPN 6,336,109 B2), Filed: April 15, 1997; Date of Patent: January 1, 2002.

The *Tresch et al.* has been discussed above and does not explicitly teach the limitations of claims 11-13. However *Howard* teaches the limitations of claims 11-13.

Regarding Claim 11:

Howard teaches,

A method according to claim 1 wherein the data classifier comprises a neural network. **[(col. 2, line 56-59 "*(i) inputting a series of training data inputs to the neural network and training the neural network* ...")]** It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matters pertains, to employ neural networks, because neural networks have significantly increased the possibilities of analyzing and classifying data sets. Especially the adaptive nonlinear property of these networks

are of primary importance. Herewith they can be used for describing and generalization almost any data set that can be represented in a continuous space. This property is directly related to the fact that neural networks can be given an arbitrary complexity by their architectural design, e.g. the number of neurons and the number of layers, provided that the learning scheme is sufficiently powerful.

Regarding Claim 12:

Howard teaches,

A method according to claim 1 wherein the training data comprises telecommunications network data. **[(col. 3, line 6-10 "***According to another aspect of the present invention there is provided a computer system for processing data relating to a communications network comprising: a data classifier arranged to classify input data into one of a number of classes ...* **")]** It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matters pertains, to use telecommunications network data as training data because this will allow one to better process, analyze, and monitor the data looking for patterns of customer usage and also, trying avert fraudulent activities. Moreover, due to the enormity of data, one can train a classifier to a specific task i.e., a classifier is typically trained on a series of examples for a particular tasks.

Regarding Claim 13:

Howard teaches,

A method according to claim 1 wherein the training data comprises telecommunications call

detail record data. **[(col. 10, line 1-9 "***A second example of the use of the invention is in detecting telecommunications fraud. As shown in FIG. 4 call detail record data 41 is input to an anomaly detector 42 which produces information about which of the call detail records are fraud candidates 43. The anomaly detector 42 comprises several components including a kernel 44 which incorporates a neural network. This neural network is trained to classify the input information 41 into classes indicating fraud or non-fraud candidates 43. The neural network is thus equivalent to the data classifier 21.*")]** It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matters pertains, to the motivation is pretty much the same as in the prior claim. The call detail record offers an enormity of information for trend analysis, fraudulent behavior, customer preferences, etc. Employing training of the data allows for a more efficient means for analytical research and processing.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. **Claims 14** is rejected under 35 U.S.C. 102(b) as being anticipated by Type Classification of Semi-Structured Documents, Markus Tresch; Neal Palmer; Allen Luniewski; (hereinafter referred to as "*Tresch et al.*") Proceedings of the 21st VLDB Conference, Zurich, Switzerland, (1995).

Regarding Claim 14:

Tresch et al. teaches,

A method of training a trainable data classifier comprising the steps of: providing a plurality of items of training data **[(2 An Experimental Vector Space Classifier, right column, page 264** "2. *Classifier Training. The classifier is trained with training data – a collection of typical documents for each class.*"**)]**; comparing a first of the items of training data with a second of the items of training data **[(2 An Experimental Vector Space Classifier, right column, page 264** "*Given a trained classifier with centroids for each class, classification of a document d means finding the "most similar" centroid v(c) and assigning d to that class c.*"**)]**; calculating a measure of conflict between the first and second items of training data **[(3 The Confidence Measure, right column, page 266 "Definition.** The *confidence* of an assignment of document d to class c(i) is defined as ... "**)]**; using one of the first and second items of training data to retrain the data classifier responsive to the measure of conflict. **[(3.1 Classifier Training Strategies, page 267** "*In this section, we concentrate on using the confidence measure to speed up classifier training. Quick (re)training is an ability that is crucial for any classifier, especially for extensibility,* ... "**)]**

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

14. **Claims 15-19** are rejected under 35 U.S.C. 103(a) as being unpatentable over Type Classification of Semi-Structured Documents, Markus Tresch; Neal Palmer; Allen Luniewski; (hereinafter referred to as "*Tresch et al.*") Proceedings of the 21st VLDB Conference, Zurich, Switzerland, (1995)

in view of

Ishida (USPN 6,556,572 B1), Filed: March 19, 1999; Date of Patent: April 29, 2003,

in further view of

Howard (USPN 6,336,109 B2), Filed: April 15, 1997; Date of Patent: January 1, 2002.

Regarding Claim 15:

Tresch et al. teaches,

A apparatus for retraining a trainable data classifier and comprising:

... a trainable data classifier and comprising: ... first item of training data ... training data with a second ... training data already used to train the data classifier ... conflict between the first and second items of training data ... etc. all of which is aforementioned and has been explicitly pointed out in the prior art reference. *Tresch et al.* does not explicitly teach an input port, a comparator, a calculator. However, *Ishida* teachers input port inherent), a comparator, a

calculator. **[(col. 7, line 16-63 "Referring now to FIG. 5 ...** *In order to accomplish the expression (2), the alternative embodiment of the weight calculator shown in FIG. 5 includes a 1/D calculator 66 and a maximum calculator 67 in addition to the components shown and described with reference to FIG. 4. The 1/D* ***calculator 66*** *is a reciprocal circuit which is interconnected to the controlled delay registers 42 and receive the data representing the controlled delay Di for a specific service class i in question to obtain its reciprocal, 1/Di, which is in turn developed from its output 89 to one input of the maximum calculator 67. The maximum calculator 67 has its other* ***input port 91*** *connected to the output from the L/D calculator 61. The* ***maximum calculator 67 functions as a comparator adapted to compare both inputs 89 and 91*** *with each other to select the larger of both of them. The maximum calculator 67 has its outputs 93 and 95 interconnected to the inputs of the storage 62 and the accumulator 63, which receives the result from the comparison, that is, the larger of the Li/Di and 1/Di. The timing control 75 is adapted to control the L/D calculator 61, 1/D calculator 66, maximum calculator 67, storage 62, accumulator 63, divider 64 and multiplier 65 so as to calculate the reset values W1-WN for all of the service classes 1-N according to the expression (2). In operation, the L/D calculator 61 receives the values of the controlled delay Di and the queue length Li from the controlled delay register 42 and the queue length counter 43 associated with the service class i in question, respectively, to produce the resultant value Li/Di from its output 91 to the maximum calculator 67. The 1/D calculator 66 also receives the data of the controlled delay Di for the specific service class i in question to produce its reciprocal, 1/Di, from its output 89 to one input of the maximum calculator 67. The maximum calculator, or* ***comparator,*** *67 in turn selects the larger one of both inputs 89 and 91 to deliver the selected one from its outputs 93 and 95 to the inputs*

of the storage 62 and the accumulator 63, respectively. ")] It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matters pertains, to employ a telecommunications data anomaly detection system, because of the tremendous potential for profit due to fraudulent activities and the enormous rise in the telecommunications services and the information generated by the demand, which naturally warrants monitoring and detection as a means of prevention and assurance.

Regarding Claim 16:

Howard teaches,

A anomaly detection system comprising apparatus according to claim 15. **[(col. 4, line 35-54** **"FIG. 1** *shows a computer system 1 that is arranged to automatically determine a classification system for a given data set that is provided to the system. The computer system accepts input data from a data source 2. The computer system searches for a set of classes 3 and class descriptions that are most likely to explain the provided data set. Once the classification system has been determined, new data can be input and classified according to this system. For example, in a situation in which information about telephone calls needs to be analyzed to detect fraud, the data source 2 consists of information about individual telephone calls made during a certain time period. The computer system 1 determines a classification system and classifies the calls into a number of classes 3. Once this is done, a human operator or user then analyses the classes to see whether fraudulent calls appear only in certain classes. The user obtains an explanation of how that data from the data source 2 has been classified as well as an explanation of what the classes 3 mean in terms of the particular data source 2 ... task or*

problem (e.g. fraud detection) involved.")] It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matters pertains, to employ an input port, comparator, and calculator because it is essential to have a means for input into the computing machine, a comparator, for the purpose of comparing i.e., examining the quantitative input of two or more input variables for the purpose of determining there mathematical relationship, and a calculator for computing the quantitative difference or product of the input variables.

Regarding Claim 17:

Howard teaches,

A telecommunications data anomaly detection system comprising apparatus according to claim 15. **[(col. 10, line 2-9 "FIG. 4** *call detail record data 41 is input to an anomaly detector 42 which produces information about which of the call detail records are fraud candidates 43. The anomaly detector 42 comprises several components including a kernel 44 which incorporates a neural network. This neural network is trained to classify the input information 41 into classes indicating fraud or non-fraud candidates 43. The neural network is thus equivalent to the data classifier 21.*")] It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matters pertains, to employ a telecommunications data anomaly detection system, because of the enormous potential for profit due to fraudulent activities and the enormous rise in the telecommunications services and the information generated by the demand. Warrants monitoring and detection as a means of prevention and assurance.

Regarding Claim 18:

Howard teaches,

A telecommunications fraud detection system comprising apparatus according to claim 15. **[(col. 10, line 29-42 "***A wide range of applications are within the scope of the invention. For example, interpreting information relating to telecommunications fraud; credit card fraud; faults in a communications network and encryption key management. The invention applies to any situation in which a large amount of data needs to be analyzed to extract features necessary for a particular task or problem domain and where it is required to explain or interpret the way in which the features were obtained. This can be used for knowledge engineering in the development of expert systems. The invention also applies to pattern recognition tasks for example taxonomy in biology, object recognition and object tracking.* **")]** It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matters pertains, to employ a telecommunications fraud detection system to avert such activities as credit card fraud; faults in a communications network and encryption key management, etc.

Regarding Claim 19:

Howard teaches,

An account fraud detection system comprising apparatus according to claim 15. **[(col. 10, line 2-25 "***As shown in FIG. 4 call detail record data 41 is input to an anomaly detector 42 which produces information about which of the call detail records are fraud candidates 43. The anomaly detector 42 comprises several components including a kernel 44 which incorporates a*

neural network. This neural network is trained to classify the input information 41 into classes indicating fraud or non-fraud candidates 43. The neural network is thus equivalent to the data classifier 21. A rule inducer 25, 45 is incorporated into the anomaly detector 42. The rule inducer 45 receives output information from the neural network which comprises a set of attributes for each customer account together with a class assignment for that customer account. The rule inducer then generates rules 24, 46. **")]** It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matters pertains, to employ an account fraud detection sys-tem for prevention and detection i.e., an early warning system, as well as a means of protection for the customer and the corporate entity.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

14. **Claim 20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Type Classification of Semi-Structured Documents, Markus Tresch; Neal Palmer; Allen Luniewski; (hereinafter referred to as "*Tresch et al.*") Proceedings of the 21st VLDB Conference, Zurich, Switzerland, (1995)

in view of

Ishida (USPN 6,556,572 B1), Filed: March 19, 1999; Date of Patent: April 29, 2003.

Regarding Claim 20:

Tresch et al. teaches,

A apparatus for retraining a trainable data classifier and comprising:

... training data, (re)training a trainable classifier ... training data to the data classifier responsive to a measure of conflict, all of which has been explicitly pointed out in the prior art. *Tresch et al.* does not explicitly teach input port, comparator, calculator, and output port. However, *Ishida* teachers input port a comparator, a calculator, and output port. **[(col. 7, line 16-63 "Referring now to FIG. 5 ...** *In order to accomplish the expression (2), the alternative embodiment of the weight calculator shown in FIG. 5 includes a 1/D* ***calculator 66*** *and a maximum* ***calculator 67*** *in addition to the components shown and described with reference to FIG. 4. The 1/D calculator 66 is a reciprocal circuit which is interconnected to the controlled delay registers 42 and receive the data representing the controlled delay Di for a specific service class i in question to obtain its reciprocal, 1/Di, which is in turn developed from its output 89 to one input of the maximum calculator 67. The maximum calculator 67 has its other* ***input port 91*** *connected to the output from the L/D calculator 61.* ***The maximum calculator 67 functions as a comparator adapted to compare both inputs 89 and 91*** *with each other to select the larger of both of them. The maximum calculator 67 has its outputs 93 and 95 interconnected to the inputs of the storage 62 and the accumulator 63, which receives the result from the comparison, that is, the larger of the Li/Di and 1/Di. The timing control 75 is adapted to control the L/D calculator 61, 1/D calculator 66, maximum calculator 67, storage 62, accumulator 63, divider 64 and multiplier 65 so as to calculate the reset values W1-WN for all of the service classes 1-N according to the expression (2). In operation, the L/D calculator 61 receives the values of the controlled delay Di*

and the queue length Li from the controlled delay register 42 and the queue length counter 43 associated with the service class i in question, respectively, to produce the resultant value Li/Di from its output 91 to the maximum calculator 67. The 1/D calculator 66 also receives the data of the controlled delay Di for the specific service class i in question to produce its reciprocal, 1/Di, from its output 89 to one input of the maximum calculator 67. The maximum calculator, or ***comparator,*** *67 in turn selects the larger one of both inputs 89 and 91 to deliver the selected one from its outputs 93 and 95 to the inputs of the storage 62 and the accumulator 63, respectively.* ")] It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matters pertains, to employ a telecommunications data anomaly detection system, because of the tremendous potential for profit due to fraudulent activities and the enormous rise in the telecommunications services and the information generated by the demand, which naturally warrants monitoring and detection as a means of prevention and assurance.

Claim Rejections - 35 USC § 102

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

16. **Claims 21-22** are rejected under 35 U.S.C. 102(b) as being anticipated by Type Classification of Semi-Structured Documents, Markus Tresch; Neal Palmer; Allen Luniewski; (hereinafter referred to as "*Tresch et al.*") Proceedings of the 21st VLDB

Conference, Zurich, Switzerland, (1995).

Regarding Claim 21:

Tresch et al. teaches,

A program for a computer on a machine readable medium arranged to perform the steps of: receiving a first item of training data **[(2 An Experimental Vector Space Classifier, right column, page 264** "2. *Classifier Training. The classifier is trained with training data – a collection of typical documents for each class.*"**)]**; comparing the first item of training data with a second item of training data already used to train the data classifier **[(2.2 Alternative Similarity Metrics, page 265-266** "Table 1 *summarizes our extensive classifier performance experiments. Experiments involved choosing random subsets from a collection of 26MB of sample data for training and then performance testing.* ... "**)]**; calculating a measure of conflict between the first and second items of training data **[(3 The Confidence Measure, right column, page 266 "Definition.** The *confidence* of an assignment of document d to class c(i) is defined as ... "**)]**; using the first item of training data to retrain the data classifier responsive to the measure of conflict. **[(3.1 Classifier Training Strategies, page 267** "*In this section, we concentrate on using the confidence measure to speed up classifier training. Quick (re)training is an ability that is crucial for any classifier, especially for extensibility,* ... "**)]**

Regarding Claim 22:

A program for a computer on a machine readable medium arranged to perform the steps of: receiving a plurality of items of training data **[(2 An Experimental Vector Space Classifier,**

right column, page 264 "2. *Classifier Training. The classifier is trained with training data – a collection of typical documents for each class.*")]; comparing a first of the items of training data with a second of the items of training data **[(2 An Experimental Vector Space Classifier, right column, page 264** "*Given a trained classifier with centroids for each class, classification of a document d means finding the "most similar" centroid v(c) assigning d to that class c.*")]; calculating a measure of conflict between the first and second items of training data **[(3 The Confidence Measure, right column, page 266 "Definition.** The *confidence* of an assignment of document d to class c(i) is defined as ... ")]; and using one of the first and second items of training data to retrain the data classifier responsive to the measure of conflict. **[(3.1 Classifier Training Strategies, page 267** "*In this section, we concentrate on using the confidence measure to speed up classifier training. Quick (re)training is an ability that is crucial for any classifier, especially for extensibility, ...* ")]

Conclusion

17. The prior art made of record and (listed of form **PTO-892**) not relied upon is considered pertinent to applicant's disclosure as follows. Applicant or applicant's representative is respectfully reminded that in process of patent prosecution i.e., amending of claims in response to a rejection of claims set forth by the Examiner per Title 35 U.S.C. The patentable novelty must be clearly shown in view of the state of the art disclosed by the references cited and any objections made. Moreover, applicant or applicant's representative must clearly show how the amendments avoid or overcome such references and objections. *See* **37 CFR § 1.111(c)**.

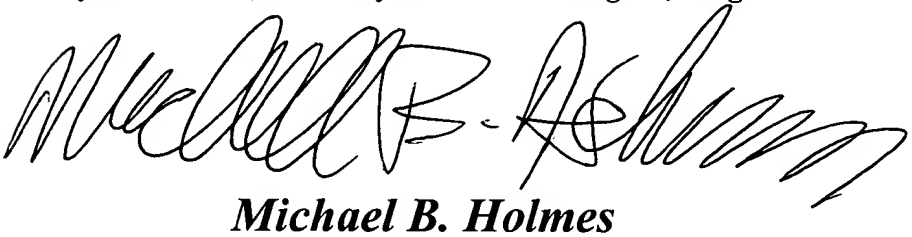
Correspondence Information

18. Any inquiries concerning this communication or earlier communications from the examiner should be directed to **Michael B. Holmes** who may be reached via telephone at **(703) 308-6280**. The examiner can normally be reached Monday through Friday between 8:00 a.m. and 5:00 p.m. eastern standard time.

If you need to send the Examiner, a facsimile transmission regarding After Final issues, please send it to **(703) 746-7238**. If you need to send an Official facsimile transmission, please send it to **(703) 746-7239**. If you would like to send a Non-Official (draft) facsimile transmission the fax is **(703) 746-7240**. If attempts to reach the examiner by telephone are unsuccessful, the **Examiner's Supervisor**, **Anil Khatri**, may be reached at **(703) 305-0282**.

Any response to this office action should be mailed too:

Director of Patents and Trademarks Washington, D.C. 20231. Hand-delivered responses should be delivered to the Receptionist, located on the fourth floor of **Crystal Park II, 2121 Crystal Drive Arlington, Virginia.**



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